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About BMAC

Bone marrow aspirate concentrate (BMAC) is used in musculoskeletal medicine to focus your body's ability to heal. It has many well-done published randomized control trials (RCT) and studies which demonstrate both its effectiveness and safety in many musculoskeletal conditions, including osteoarthritis, tendinopathies, and damaged vertebral discs. BMAC has been in clinical use since the 1990's and has the most potential for musculoskeletal repair. The bone marrow is a rich source of mesenchymal stem cells (MSCs), which are a potent cell for focusing the body's own repair process. MSCs bind to an injury site and initiate and organize repair to the damaged tissue. Precisely placing BMAC into the site of injury will initiate the healing process by activating on the damaged cartilage or tendon.

What to expect and how to prepare for BMAC

- **2 weeks prior to the procedure:** Arrange for a driver to bring you home. IF you are having a lower extremity procedure, and IF you will not be able to manage using crutches, arrange for a wheelchair rental for 3 days (the day of and 2 days after your procedure). (Wheel chair rental available at Annapolis Healthcare Supplies, (40 dollars for 2-3 days), 410 295-7300.) We can provide crutches as needed.
- *This procedure cannot be done if you are currently taking anticoagulation (anti-blood clot) medication.* Ask your prescribing physician if you are safe to briefly stop these medications to have an SGB. Have him/her fax a note to our office stating your anticoagulation can be temporarily stopped and restarted that day after the procedure (410-505-0531.)
- **5 days prior to the procedure:** Stop taking anti-inflammatory drugs like ibuprofen, Naprosyn, Celebrex, etc. Let your doctor know if you have been taking prednisone or other corticosteroids in the last month. Anti-inflammatory drugs and corticosteroids such as prednisone may blunt this process, so it is important to not take any anti-inflammatory drugs for 5 days prior to BMAC therapy, and for at least three weeks after BMAC therapy.
- **The day before the procedure:** Thoroughly shower and clean your skin. You will not be able to shower for 24 hours after the procedure.
- **The day of the procedure:** If you are having an upper body procedure wear a top that can button or zip up.

What happens during the BMAC procedure?

First, your bone marrow is aspirated or drawn out of the back part of the pelvis. This is not as bad as it might sound. You will lay face down on a comfortable body pillow, and the skin over your lower back and hips will be thoroughly cleaned with a surgical skin preparation called Chloroprep and draped. Then, to make the procedure more comfortable and to numb the bone marrow cavity, we will do a procedure called a caudal epidural where we will inject 10 milliliters of a numbing medicine (lidocaine) into

the epidural space. Using ultrasound guidance we will mark the aspiration sites and numb the skin and the surface of the bone at the aspiration sites. Dr. Mulvaney will use a special needle to enter the bone marrow cavity in the pelvis bones just above your buttocks and aspirate the bone marrow into several syringes. Bandages will be placed on the aspiration sites. The bone marrow is processed by an FDA-approved method to concentrate the nucleated cells. Finally, the skin at the injured site is numbed with a local anesthetic (buffered lidocaine). Dr. Mulvaney will then precisely inject the BMAC into the injury sites using ultrasound or fluoroscopic guidance.

What to do after your procedure

- BMAC will initiate healing and a productive inflammation, thus making the treated body part sore for 4 days to two weeks.
- I will give you specific medicine to control any discomfort you may have after the procedure. Avoid NSAIDs like ibuprofen. Acetaminophen can be used for mild pain.
- Let me know if you have a history of opioid addiction so we can use appropriate pain medication.
- Avoid showering for 1 day and avoid immersion in water for 3 days. Any bandages can be removed after 1 day.
- Depending on the part of the body treated, you may be placed in a sling or on crutches for 1 to 3 days. Do your best not to tense or load the treated area during this time.
- Tobacco is a potent toxin and its use constricts small blood vessels which are needed for tissue repair. Tobacco use will limit the effectiveness of any treatment and stopping tobacco use is one of the single greatest actions you can take to improve your health. Avoid toxins like alcohol for the next 5 days, which inhibit and depresses the cells needed for tissue repair.
- If you were on crutches for a period of time, walking is ok once you are off the crutches. For now, avoid activities that specifically hurt you before being treated.
- After 3 days, unless otherwise instructed, the treated body part should be used and slowly moved through its full range of motion. It will be sore, but you will not be doing damage by moving it, in fact it needs to move to heal. Refer to the rehabilitation instructions for your injury site at drseanmulvaney.com.
- Exercise is vital to good health and finding a way to cross train around your injury is important not only for your physical health, but for your mental health as well. Ask me about cross training options for your injury.
- Some brief (10 minutes or less) period of heat or ice therapy will not hurt the therapy, but it is not required.
- Usually, depending on the initial injury, physical therapy is started four weeks after injection. Improvements in pain and function should be expected from 12 weeks to 16 weeks after injection but may happen sooner.